WHAT IS CLAIMED IS:

1. A solar energy concentrator comprising a spiral horn having an axis perpendicular to a plane of the spiral, said concentrator including: an input aperture forming a mouth of the horn, an internal light-reflecting surface of the horn, and an exit aperture at an end of the horn remote from the mouth of the horn, said exit aperture being smaller than said input aperture and said horn continuously tapering both in the direction of said axis and in the plane of the spiral, between the input and output apertures, wherein the horn is adapted to concentrate, by multiple reflections from the internal light-reflecting surface of the horn, solar energy incident within a predetermined range of angles of incidence on the input aperture, such that concentrated solar energy is emitted from the exit aperture.

2. A solar energy concentrator as claimed in claim 1, wherein at least one director is provided in the mouth of the horn to reflect light incident from outside the predetermined range of angles of incidence into the predetermined range of angles of incidence.

3. A solar energy concentrator as claimed in claim 2, wherein the at least one director is a baffle disposed substantially parallel to the axis of the spiral horn.

4. A solar energy concentrator as claimed in claim 2, wherein the at least one director is a partial spiral horn disposed substantially perpendicular to the axis of the spiral horn in at least a portion of the spiral horn most proximate to the mouth of the horn.

5. A solar energy concentrator as claimed in claim 1, wherein the spiral horn has a substantially quadrilateral cross-section parallel to the axis of the horn.

6. A solar energy concentrator as claimed in claim 1, wherein the taper in the plane of the spiral is a Golden Section Spiral.

7. A solar energy concentrator as claimed in claim 1, wherein the horn is of metal.

8. A solar energy concentrator as claimed in claim 7, wherein the metal is aluminium.

9. A solar energy concentrator as claimed in claim 1, wherein the horn has portions formed of different materials disposed along the horn spiral, the materials being adapted to withstand the temperatures reached in the respective portions of the collector in use.

10. A solar energy concentrator as claimed in claim 9, wherein a portion of the horn proximate the exit aperture is of a ceramic material.

11. A solar energy concentrator as claimed in claim 1, wherein the light-reflecting surface is protected by ultraviolet radiation absorbing means.

12. A combination of the solar energy concentrator as claimed in claim 1 and distribution means in communication with the exit aperture and adapted for distributing the concentrated solar energy emitted from the exit aperture.

13. A combination as claimed in claim 12, wherein the distribution means includes at least one light pipe.

14. A combination as claimed in claim 12, wherein the distribution means includes a diffuser for diffusing at least some of the concentrated solar energy to provide illumination.

15. A combination as claimed in claim 14, wherein the diffuser is in the shape of a spiral horn.

16. A solar energy concentrator as claimed in claim 1 in the combination with a solar energy conversion chamber having a chamber aperture in communication with the

concentrator exit aperture, the chamber containing energy conversion means for converting concentrated solar energy emitted from the exit aperture.

17. A combination as claimed in claim 16, wherein the energy conversion means includes a photovoltaic cell.

18. A combination as claimed in claim 16, wherein the energy conversion means includes heat absorbing media.

19. A combination as claimed in claim 16, wherein the energy conversion means includes steam generating means.

20. A combination as claimed in claim 16, wherein the energy conversion means includes a solar furnace.

21. A combination as claimed in claim 16, wherein at least some of the solar energy is reflected within the chamber before being incident on the energy conversion means.

22. A combination as claimed in claim 16, wherein at least some of the solar energy undergoes wavelength changes within the chamber.

23. A combination as claimed in claim 22, wherein solar energy increases wavelength by energy absorption and/or dissipation.

24. A combination as claimed in claim 16, wherein solar energy distribution means is provided to transmit solar energy from the exit aperture to the chamber aperture.

25. A combination as claimed in claim 24, wherein the distribution means includes at least one light pipe.